

DISCUSSION OF THE AMENDMENT

Claims 30-31, 44, 47, 52, and 54-59 are active in the present application. Independent Claim 30 has been amended to define the second combination of threads as containing a combination of co-blended threads that consist essentially of threads of a reinforcing material such as glass filaments and threads of at least one thermoplastic organic material. Support for the amendment is found in original Claims 3 and 4. Claims 58-59 are new claims. New Claim 58 has been added. Support for new Claim 58 is found in original Claim 4. Support for new Claim 59 is found in paragraphs [0069]-[0070], and [0037] of the PG Publication corresponding with the present application (i.e., 20020124936).

No new matter is believed to have been added by this amendment.

### REMARKS

The Office rejected Claims 30-31, 44, 47, 52, and 54-57 under a combination of newly cited and previously cited prior art including Middelman (US 5,269,863), O'Connor (US 4,800,113), NASA ("Solventless Fabrication of Reinforced Composites"), Curzio (US 4,539,249), Vane (US 4,445,693), and/or Matsuo (US 5,989,710).

Independent Claim 30 now requires that the second combination of threads comprises at least 50% by weight of co-blended threads and further that the co-blended threads consist essentially of intimately mixed threads of glass filaments and filaments of at least one thermoplastic organic material.

Middelman discloses a process that is different from the process of the present claims. The process of Middelman forms a laminate structure by impregnating one or more layers of reinforcing yarns (e.g., threads) with a curable resin (see column 3, lines 9-17 of Middelman). The presently claimed invention requires no such impregnating. In fact, Claim 30 recites that the composite structure obtained by the process of the claimed invention is one that consists of only the first bundle of parallel threads, the lap of threads and the second bundle of parallel threads. The process of Claim 30 must exclude the process of Middelman because Middelman makes a composite that is excluded by the present claims.

Applicants submit that Claim 30 is patentable over the cited prior art at least because it would be impossible for the process of Middelman to provide a composite sheet that consists of only layers of different reinforcing fibers. If the reinforcing fibers of Middelman were not impregnated with the prior art resin, the Middelman structure would simply fall apart and not be effective for its intended purpose, e.g., as a substrate for a printed wire board.

The second combination of threads of the presently claimed invention includes at least 50% by weight of a mixture of co-blended and intimately mixed filaments of glass filaments

and filaments of at least one thermoplastic organic material. This limitation, among others, distinguishes the presently claimed invention from O'Connor.

For example, O'Connor discloses thermoplastic fibers that are intermingled with reinforcement fibers (see the Abstract of O'Connor). However, the intermingled fibers of O'Connor are different from the co-blended fibers of the present claims. The intermingling of O'Connor is described at column 3, lines 34-61. Techniques for intermingling are disclosed, i.e., braiding. Applicants submit that a braided yarn and a co-blended and intimately mixed combination of different filaments are two different things and that the co-blended thread of the present claims is different from the intermingled fibers of O'Connor. This is evident in Example I of O'Connor where a carbon fiber yarn is formed by twisting a reinforcing yarn with a poly(phenylene sulfide) (PPS) yarn. O'Connor yarns are made "by twisting". A twisted yarn is not the same as a co-blended yarn made from an intimately mixed combination of filaments.

The same argument holds for the UK '041 publication. The examples of the UK '041 publication disclose a fabric made from polyether ketone fibers (PEK) that are twisted with a glass fiber. The twisted yarn (e.g., thread) is different from the co-blended thread of the present claims.

NASA further likewise does not disclose the co-blended thread of the present claims. The NASA thermoplastic fibers and reinforcing fibers are laid one next to another without co-blending.

Curzio discloses a graphite fiber that is not a co-blended fiber. The fiber of Curzio is made by combining several different yarns together. As was discussed above with regard to Middelman, O'Connor, NASA and UK '041, the Curzio prior art discloses a reinforced graphite material. Even if the fibers of Curzio are blended, they do not form an intimately mixed, e.g., co-blended, mixture of different filaments.

Vane does not disclose any co-blended threads having intimately mixed filaments. Thus, like O'Connor, Vane does not disclose the claims invention.

For the reasons discussed above, *inter alia*, the prior art's silence with respect to forming a composite structure made from solely a first bundle of parallel threads, a lap of threads, and a second bundle of parallel threads and further in view of the differences between the co-blended threads of the presently claimed invention and the intermingled and/or mixed threads of the prior art, Applicants submit that the claimed invention is patentable over the cited prior art.

With respect to the rejection in view of Matsuo, Applicants point out that the cited prior art is in a non-analogous art. Moreover, Matsuo does not form a composite structure such as the layered composite structure of the present claims. Instead, the process of Matsuo discloses forming a pelletized molding material. Applicants submit that a process for forming the pelletized molding material of Matsuo is different from the process of the claimed invention which forms composite sheets having a layer structure and containing various threads arranged in a particular orientation.

For the reasons discussed above, Applicants submit that all now-pending claims are in condition for allowance. Applicants request withdrawal of the rejection and the allowance of all now-pending claims.

Respectfully submitted,

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